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Improvisation and entrepreneurial bricolage versus rationalisation: A case-based analysis of contrasting responses to economic instability in the UK brass musical instruments industry

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ABSTRACT

In periods of economic crisis and instability, the response of many business organisations is to try and adapt to prevailing market conditions. This typically results in a pattern of retrenchment and rationalisation designed to cut costs. Responses of this kind may be justifiable and, to varying degrees, effective at a firm-level. However, their wider repercussions can include the worsening of a pre-existing economic downturn (e.g. large-scale redundancies affecting local communities and cancelled orders affecting other firms in the supply chain). When faced with an economic crisis, some firms adopt a more entrepreneurial approach, in which the key features are strategic reappraisal and various forms of product, process and organisational innovation (Filippetti and Archibugi, 2011). While large corporations are capable of this kind of transformation, there is an increasing recognition of the important part that smaller entrepreneurial firms can play in innovation (Christensen, 1997) including the reinvigoration of industry sectors through open innovation (Chesbrough, 2003) and contributing to the reconfiguration of geographic clusters (Best, 2001). Studies of long wave cycles have shown that periods of economic crisis and depression can be important for innovation: they can disrupt established industry structures and cause entrepreneurs to see markets and customers in a different light so that they re-think products and services (Barras, 2009). However, comparatively little attention has been directed to considering just how entrepreneurial individuals in smaller firms mobilise the resources necessary for innovation and cope with risk in the unfavourable and demanding conditions that prevail in times of economic crisis. This exploratory study seeks to address this research gap. It does so through an in-depth historical case study of the contrasting responses of two firms, in the same industry sector but operating on different scales with differing modes of production (i.e. artisanal v. mechanised), to the greatest economic crisis of the 20th century, namely, the Great Depression of the 1930s (Crafts and Fearon,

2011). The two firms, which served the same markets and were affected by the same external forces, followed very different paths: the larger one engaged in a series of acquisitions as a means of rationalising production and cutting costs, while the much smaller firm that operated on a very modest scale chose to innovate. This innovation involved developing a product that was new to Britain at the time, namely the sousaphone, an unorthodox musical instrument that hitherto had only been produced in the United States. As well as comparing the activities of the two firms operating on different scales, the study examines why the owners of this small firm decided to innovate in the very difficult trading conditions that prevailed at the time, and exactly how they were able to acquire and mobilise the resources needed to pursue this path. In particular, the study focuses on the use of improvisation (Kamoche, Cunha and Cunha, 2002), that is to say 'impromptu action' (Dickson, 1997: p. 37), and the closely related concept of entrepreneurial 'bricolage' (Baker and Nelson, 2005; Phillips and Tracey, 2007) or 'making do' (Eisenberg, 1990: p. 154), as a means of accessing the resources required.

The findings suggest that while large-scale enterprises often concluded that a strategy of retrenchment and rationalisation was the appropriate response to economic crisis, firms operating on a smaller scale viewed the situation differently and responded to the altered trading conditions in more positive, creative and entrepreneurial ways. As a result they were able to identify opportunities associated with new and expanding markets with scope for innovation. The study provides insights into the ways in which these small firms were able to identify and access the necessary resources for their innovations. It also sheds new light on the improvisatory nature of their entrepreneurial response, and its capacity to overcome seemingly insurmountable obstacles to growth in a recessionary environment (e.g. adapting existing resources to new uses, forming unconventional subcontracting arrangements and turning existing skills to new uses). The paper concludes with a summary of the key findings and their implications for future research and practice.

Introduction

Economic crises linked to downturns in the business cycle induce what Dess and Beard (1984: p. 56) term 'environmental dynamism,' where the business environment becomes characterised by turbulence and instability. The instability associated with this kind of environment very often leads to sharply declining firm performance; in these difficult trading conditions Michael and Robbins (1998) note that firms frequently respond by seeking to restore stability and performance by retrenchment, in particular, pursuing strict cost reduction measures. Where the economy as a whole is in recession, retrenchment can extend to rationalisation, where the aim is to utilise acquisitions to both reduce competition and provide scope for re-structuring production by closing plants and concentrating production in order to increase scale economies and lower costs. In recent years this sort of rationalisation has been observed in East Asia (Amsden and Kim, 1989) and Eastern Europe (Husan, 1997), but it was also widely used in Britain in the severe recession of the 1930s. Indeed, Rosen (2002) notes that it was very much a feature of the British cycle industry at this time. However, retrenchment and rationalisation are not the only strategies open to firms in times of recession. Despite the prevailing economic gloom, in times of economic crisis one finds entrepreneurial individuals who manage to identify opportunities for innovation and find the means to exploit them by gaining access to appropriate resources. For example, a recent survey of UK

The remainder of the paper is organised as follows. The next section reviews the literature on improvisation and entrepreneurial bricolage, highlighting key contributions and possible research gaps. This is followed by the research methods section, which explains how the case studies were constructed. The main case study narrative begins with an overview of the brass musical instrument manufacturing sector in the early 20th century. The 'rationalising' response of the larger incumbent firm is then contrasted with a detailed account of entrepreneurial improvisation by a smaller musical retail business, which involved a diversification into manufacturing. The concluding discussion draws out the implications for research and practice in this area.

Improvisation and entrepreneurial bricolage: a review of the literature

Improvisation is generally contrasted with rational models of organisational decision making, which assume a logical, sequential process where plans are implemented only after they have first been drafted. Weick (1998: p. 544) notes that the term improvisation is derived from the word 'proviso' meaning a condition or stipulation, so that the addition of the prefix 'im' means without conditions or stipulations. Hence, improvisation is the inverse of foresight and planning. Moorman and Miner (1998b) describe it as action that is simultaneously devised and executed, a view that coincides with Dickson (1997: p. 37) who defines improvisation as 'impromptu action', that is, activities taking place with a limited amount of any advanced preparation. Weick (1998) identifies what he terms 'sub-themes associated with improvisation', in particular notions of spontaneity and intuition, and in a similar vein Miner et al. (2001) stress novelty and extemporaneous activity as dimensions of improvisation. Kamoche et al. (2002) note that improvising is actually quite a common human capability that can be observed in many aspects of life. For instance, improvisation is often associated with creative activities like music, theatre, therapy or education (Miner et al., 2001). Being used in a variety of different contexts, the term improvisation inevitably has subtly different meanings depending upon the context. According to Moorman and Miner (1998b: p. 4) in the field of education, improvisation refers to 'thinking in the midst of action', while in sport science it means 'reading and reacting in parallel', and in music it comprises 'real time composition'. Significantly, the term improvisation is actually found comparatively rarely in the management literature. It has been suggested (Kamoche and Cunha, 2001) that in areas like marketing and new product development the notion of rational and systematic planning is so deeply entrenched that improvisation, as the very antithesis of this kind of approach, has received little attention from scholars. Thus, the absence of improvisation in the innovation and new product development literature reflects, according to Kamoche and Cunha (2001: p. 736) 'the dominant assumption, especially in textbooks, that disciplined action and uncertainty avoidance are the keys to success in innovation'. They argue that there are circumstances where improvisation is an appropriate response to innovation.

Moorman and Miner (1998a) use jazz to differentiate what they refer to as different 'levels' of improvisation, by which they mean differences in the scope of improvisation. They note how in jazz, improvisation can involve nothing more than modest adjustments to an existing melody, a process that Weick (1998) describes as 'interpretation'. In contrast, there are extreme forms of improvisation, as when the performer discards clear links to the original piece altogether, a form of improvisation termed 'free jazz' (Moorman and Miner, 1998a: p. 703). As with jazz, so with decision-making. Improvisation may involve very limited changes to existing routines and processes. On the other hand, improvisation can involve a very radical departure from existing routines. As an

example, Moorman and Miner (1998a: p. 703) cite the case of the NASA team that rescued the Apollo 13 space mission by departing radically from planned procedures using objects in quite different ways from those for which they were designed (Lovell and Kluger, 1995).

Whatever the type of improvisation involved there remains the question of how the improvisation is achieved. Miner et al. (2001: p. 314) suggest that because improvisation takes place in situations where resources, such as time, are limited, it is often associated with 'bricolage'. The concept of bricolage originated (Di Domenico et al., 2010) with the work of Lévi-Strauss (1966: p. 17) who identified it as a course of action to be found when resources are scarce and involving, 'making do with what is at hand'. A recent study by Jones et al. (2014: p. 155) expands upon this definition by referring to bricolage as a technique used by nascent entrepreneurs to 'deploy and integrate resources in novel ways'. They contrast it with 'bootstrapping' (Smith, 2009) a technique they describe as, 'engaging with others to borrow, share and appropriate resources'. Significantly, Jones et al. (2014: p. 155) suggest that both concepts 'are potentially key dynamic capabilities' that enable entrepreneurs to enhance the value of the resources at their disposal by extending and integrating such resources.

A more comprehensive definition of bricolage, and one that is widely cited, is provided by Baker and Nelson (2005: p. 334) who define it as 'making do by applying combinations of the resources at hand to new problems and opportunities'. They suggest that bricolage comprises three main elements. Following Lévi-Strauss (1967) the first element is 'making do'. By this, they mean refusing to accept the limitations of existing resources, a reference to Penrose's ([1959] 2004) notion that firms vary enormously when it comes to extracting services from given physical inputs. The second element is combining resources for new purposes, by which they mean the 'reuse of resources for different applications from which they were originally intended' (Baker and Nelson, 2005: p. 335). The third element involves 'resources at hand' (Baker and Nelson, 2005: p. 336). This again is derived closely from Lévi-Strauss (1967) and refers to 'the 'inherited' internal resources of the firm' (Baker and Nelson, 2005: p. 336) i.e. pre-existing resources rather than new ones. The concept of entrepreneurial bricolage as a means of improvising has been studied in a limited number of different contexts. Linna (2013) explored the use of bricolage by entrepreneurs in developing countries. Bricolage was found to be widely used by local entrepreneurs as part of the innovation process in the resource-scarce environment found in many developing countries. Though the nature of the available resources may be very different, resource-scarce environments also exist in some developed countries. Garud and Karnøe (2003) charted the contrasting development of wind turbines in the United States and Denmark. They found Danish companies' unplanned and under-funded innovation process was successful because of entrepreneurs' use of improvisation. This took the form of bricolage involving 'making do' with low tech designs being gradually scaled up by frequently re-using 'pre-existing underutilized resources' (Garud and Karnøe, 2003: p. 282) which were available locally. It was noted earlier that Kamoche and Cunha (2001) identified the absence of improvisation from the literature on innovation and new product development as stemming from its relative neglect by management scholars. In view of this and the observation above that there have been only a limited number of studies of entrepreneurial bricolage, the research reported here aims to make a small step towards rectifying this imbalance, by providing an in-depth perspective on the use of entrepreneurial bricolage as part of the innovation process within a small firm.

Research methods

Gummesson (2000) advocates historical analysis as a valuable method for case study research and this paper draws on this approach to analyse the reaction of two case study firms, both manufacturers of brass musical instruments, to a period of severe and prolonged economic crisis. Since the two firms were very different, they are in Silverman's (2013: p. 146) terms 'extreme cases', thus providing scope for a powerful comparative analysis contrasting the behaviour of a small entrepreneurial firm with that of a large established one. As the cases trace the behaviour of the firms over time they are in Yin's (2014: p. 10) terminology 'examples of explanatory case studies', a form of case study that Curran and Blackburn (2001: p. 104) argue is particularly appropriate for analysing entrepreneurial activity. The cases employed a 'dual' methodology (Leonard-Barton, 1990) comprising interviews and documentary/archival materials. The interviews were undertaken using the key informant approach, a technique widely used in ethnographic studies (John and Reve, 1982; Phillips, 1981). Five key informants were interviewed, having been selected not on a random basis but because of their experience and specialist knowledge (Curran and Blackburn, 2001). They comprised two former employees, two professional horn players and one amateur horn player. The first two had occupied roles within the company that made them especially well-informed and knowledgeable about the events and issues to be explored in the study. The first had worked in a managerial capacity for many years, while the other had been there for a much shorter period, but was familiar with the personalities involved and was able to articulate some of the key operational aspects of horn production. The other three had all been customers over a lengthy period and were very familiar with the company's products as well as having detailed knowledge of the company itself. The two professional horn players also had extensive knowledge of the music business, being well-known and internationally recognised horn players. They also knew the company well, having helped them in a consultancy capacity from time to time.

Identification of the sample of key informants followed a snowballing strategy similar to that outlined by Healey and Rawlinson (1993: p. 346), whereby having interviewed 'one good senior contact', that individual's personal network proved very effective in identifying further suitable key informants. The interviews, which were semi-structured, were conducted face-to-face and lasted between 60 and 90 minutes and were both recorded and transcribed. The transcripts were supplemented by field notes which highlighted key issues. Documentary and archival materials were also used as Yin (2014: p. 107) suggests both can serve to corroborate and augment the data obtained from key informant interviews. The archival materials comprised business records of a number of leading brass instrument manufacturers deposited in the Boosey & Hawkes archive at the Horniman Museum in London. The main items used were operational records (Yin, 2014) in the form of: stock books, workshop order books, instrument books, piston and sundries books and instrument stock books for Boosey & Hawkes Ltd that provided details of production levels and production methods. This data was supplemented by quantitative data from a major survey of economic activity in small firms (Gray, 2010; Blundel, 2013). Mindful of Curran and Blackburn's (2001) criticism that case study research involving small firms often tends to be rudimentary because of an over-dependence on interviews and observations, additional documentary materials were used, gathered from a range of secondary sources, in order to assist in constructing the narrative. These included specialist music periodicals published by learned societies and other similar bodies associated with various musical genres. As detailed in Table 1 they included periodicals like the

Brass Bulletin and The Horn Call. A small number of newspaper articles were also consulted (Costa, 2010; Wyse, 2007), together with a number of specialist texts that provided valuable biographical data. These included biographies of musicians (Gamble and Lynch, 2012; Rees, 2008), business histories (Bigio, 2012; Wallace, 2007), studies of particular instruments (Herbert and Wallace, 1997; Merewether, 1978), and studies of musical genres and styles (Brand and Brand, 1979; Herbert, 1991; McCarthy, 1971; Parsonage, 2005; Russell, 1997). The use of different types of secondary data was designed to ensure its overall quality, with authorship divided between academics from a variety of different disciplines, journalists, dealers, consultants and professional and amateur musicians. This additional material served both to triangulate the interview data and provide contextual data that facilitated development of the historical narrative. Data from the interviews was analysed manually, which was manageable given the small number of interviews. Data reduction designed to sharpen the focus of the data involved the identification of key events (Gibbs, 2008) and key themes (Ryan and Bernard, 2003) that formed the basis of the coding of the transcripts and field notes. Coding was an ongoing and iterative process. In addition, a small number of 'vignettes' (Miles and Huberman, 1994: p. 51) were identified, which succinctly illustrated the developments taking place in the firms. Having amassed much documentary material, this was then subjected to content analysis (Bryman and Bell, 2007) designed to systematically extract relevant contextual detail for the case studies. The resulting narrative is chronological in structure and is analysed in relation to the strategies to counter the effects of economic crisis that were followed by the two case firms from the brass instruments sector.

INSERT ABOUT HERE - Table 1: Specialist periodicals

Case study: contrasting responses to an economic crisis

An overview of the UK musical instruments industry

The period before the First World War represented a high point for the brass musical instruments sector. Table 2 shows that there were five relatively large brass instrument manufacturers, four of whom employed about 100 employees. Significantly, none of these firms could match the largest French firm, which at this time employed around 500. London was a major centre for musical instrument manufacturing with some 23,000 employed in this sector in the late 1920s (White, 2008: p. 190). Four of the five large manufacturers were located in this region, three of which were based in central London. In addition, there were a number of smaller manufacturers such as Rudall, Carte & Co, some of whom produced not only brass instruments but woodwind ones as well (Bigio, 2011). There were also smaller workshop-based manufacturers, many of whom produced just one type of instrument and had migrated into manufacturing, having previously undertaken repair work. In addition, there were a number of music dealers that sold musical instruments and a wide variety of accessories ranging from small items like mouthpieces to larger ones, such as travelling cases. Table 3 shows that the larger firms like Boosey & Co were well represented in all three segments of the market comprising professional musicians, military bands and brass bands. Professional musicians, of whom there were some 47,000 in Britain according to the 1911 census (Russell, 1997: p. 5), were a sizeable market segment playing at venues such as theatres, music halls and night clubs (Russell, 1997: p. 5), and from the 1920s dance halls and even hotels (McCarthy, 1971). A very substantial proportion consisted of London based musicians playing popular music at the many entertainment venues that the capital offered at this time.

The larger instrument manufacturers also sold to the many military bands active in Britain during this period. There were long-standing links between instrument manufacturers and military bands. The founder of the instrument makers, Hawkes & Son, William H. Hawkes, had been a bandsman in the Scots Fusilier Guards (Wallace, 2007: p. 5) and his son Oliver Hawkes developed instruments specifically for the military band market. Under his management the firm began publishing military band music including that of Major F. J. Ricketts, band master of the Royal Marines, who composed the million-selling 'Colonel Bogey'. Similarly, several influential figures in the rise of the brass band movement, including John Distin, John Gladney and the composer Charles Godfrey also had a military background (Herbert, 2000). Furthermore, military bandmasters had long had powerful associations with both instrument manufacturers and retailers in London. 'Suppliers to the military' was a common boast (Herbert and Sarkissian, 1997: p. 169). A photograph of Boosey & Hawkes' Edgware factory in the 1930s shows the water tower painted to resemble a military drum (20th Century London, 2013). Many army bandmasters earned commission from instrument manufacturers, while others were involved in adjudicating at band contests or arranged music for brass band test pieces (Herbert, 2000: p. 63). Military bands located overseas, especially within the British Empire, were an important part of the military band market. Wallace (2007: p. 5) notes that in the later 19th century, 'no maharajah worth his salt would be without an entire military band'. The third market sector for brass instruments was the brass band movement, comprising amateur players. The first all-brass bands (see Table 4) had appeared in Britain in the 1830s and 1840s (Myers, 1991). During the course of the second half of the 19th century, bands sprang into life in a range of working-class communities including missions, mills, pits and villages (Brand, 1979b), particularly in industrial centres in the North of England. Mill owners rarely joined the musical activity but took pride in financing their own band. This fuelled the demand for brass instruments, many of which were imported. Indeed, the London Illustrated News reporting the Great Exhibition of 1851 noted, 'the show of brass instruments in the French department is exceedingly good' (Brand, 1979b: p. 11). The number of brass bands increased dramatically towards the end of the 19th century (Myers, 1991). This growth was reflected in the increasing share of Boosey & Co's sales of brass instruments taken by brass bands, which rose from 8% to 33% between 1875 and 1899 (see Table 3). It has been estimated that there were some 2000 to 3000 brass bands in Britain at this time (Russell, 1991). Brass band contests helped to fuel the growth of the brass band movement while the proliferation of contests helped to raise playing standards. This in turn boosted the demand for brass instruments. While a large proportion had been imported, by the end of the 19th century the vast majority were made in Britain by the larger producers (see Table 2) such as Boosey, Hawkes, Besson and Higham (Myers, 1991).

INSERT ABOUT HERE - Table 2: Larger brass instrument manufacturers circa 1900

INSERT ABOUT HERE - Table 3: Boosey & Co annual sales by market segment 1875–99

Although most were located in the North of England, brass bands were an important market for the larger London-based instrument manufacturers at this time. This reflected the part that brass band contests played within the brass band movement. By far the most important of these contests took place in London, the National Brass Band Championships, held annually at Crystal Palace in Sydenham, South London. Brass band contests were, in the words of Herbert and Sarkissian (1997:

p. 168), 'the central feature of brass band orthodoxy', and Crystal Palace represented the pinnacle of such events, the 1913 contest attracting a crowd estimated at 70,000 to 80,000 (Russell, 1997: p. 5). The National Championships had first been promoted in 1900 by entrepreneur John Henry Iles with support from the composer Sir Arthur Sullivan (Bevan, 1991), himself the son of a military bandmaster. In that year a massive 1000 guinea first prize was offered and a total of 27 bands attended (Brand, 1979a: p. 45). Crystal Palace quickly became the national base for brass band contests, despite being located in the South of England. Big stands with 'large exhibitions of the products' (Myers and Eldredge, 2006: p. 49) were a feature of the Crystal Palace event, which was where bands purchased much of their equipment, often as sets of instruments rather than individual items (Herbert and Sarkissian, 1997). Typically, Northern bandmasters would keep back their orders for new equipment until the contest day, and then give substantial orders, frequently paying in cash on the day. Marthe Besson, the head of the instrument makers Besson & Co, attended the championships in person every year, being 'personally acquainted with bands and bandmasters' (Myers and Eldredge, 2006: p. 49). Indeed, the reason for Besson's setting up a factory in London (it was originally a French firm based in Paris (Eldredge, 2003)) was the presence of the lucrative brass band market in Britain.

INSERT ABOUT HERE - Table 4: Size of the average brass band (circa 1860)

The impact of the Great Depression on this industry sector

The period before the First World War marked the high point of the brass band movement with an estimated 5000 bands in Britain (Russell, 1991: p. 58). Their popularity began to decline in the immediate postwar years. It gathered pace with the onset of severe economic depression in the 1930s. Mass unemployment, with the number out of work never below one million throughout the period 1920–39 (Russell, 1991: p. 77), meant that many bands faced severe financial problems. This was exacerbated by population movement as many of the unemployed went south in search of work. The second half of decade of the 1930s was a period of 'marked difficulty' (Russell, 1991: p. 59). Table 5 shows that the number of bands from two counties in Northern England that regularly competed in brass band contests effectively halved during the inter-war period. Since competing bands would have been the bigger and more established ones, it is evident that as a whole, brass bands suffered what Russell (1991: p. 59) describes as 'quite a rapid absolute numerical decline' (Russell, 1991: p. 59) during the inter-war years. This led to a fall in the demand for brass instruments and a period of severe contraction in musical instrument manufacturing in Britain (Myers, 2003). Although the depression was less severe in London and the South East, the contraction of instrument manufacturing was particularly marked in London, in part because the industry was heavily concentrated in the capital. Wallace (2007: p. 7) describes the changes that affected the music trade in the inter-war years as a 'sudden and seismic upheaval'. The decline in the number of brass bands brought about by economic depression in the North of England was exacerbated by changes to other sectors of the market. These included the rise of protectionism, which destroyed some export markets and competition from new technologies, such as the gramophone, the radio and 'the talkies' (i.e. sound film). The firm of Rudall, Carte & Co was one of those badly affected by the growth of protectionism. Best known as a manufacturer of high quality flutes, in the years before the First World War, 'its instruments had become the natural choice of serious flutists in Great Britain and were popular in Europe and throughout the English speaking world' (Powell, 2012). Virtually every leading player in Britain used one of their instruments and

many were exported to the United States. They also made a range of brass instruments. But when the Fordney-McCumber Tariff Act was passed in the US in 1922 'swingeing' import tariffs were imposed on goods imported from Britain (Haswell, 2011). Rudall, Carte & Co rapidly lost its lucrative American market, gradually plunging the company into a downward cycle from which it never really recovered (Bigio, 2011).

INSERT ABOUT HERE - Table 5: Competing brass bands in Yorkshire and Durham 1913–54

The impact of technological change was if anything, even more dramatic. In 1924 half the membership of the Musicians Union, which comprised the bulk of the professional musician segment of the instrument market, worked in cinemas. After the arrival of the *The Jazz Singer*, the first 'talkie', in the UK in 1929, cinemas adopted mechanically-produced music and within months a major slice of the music market just disappeared (Wallace, 2007: p. 7). Set against these negative influences was one positive trend at this time, namely the enormous popularity of dancing and dance music from the mid-1920s (McCarthy, 1971) and throughout the 1930s (Parsonage, 2005). Jazz swept into Britain from America in the years immediately after World War One, leading to a period in which, 'for the next 30 years dance music and public dancing became popular across the nation' (Bragg, 2012). Prompted by the 'dance craze' (McCarthy, 1971: p. 15) of the 1920s, there was, according to Parsonage (2005: p. 40) 'a huge increase in venues for dancing'. Purpose-built dance halls featuring live performances by dance bands began to appear in towns and cities across the country. To cater for this trend specialist dance bands emerged, led by, amongst others, Jack Hylton and Bert Ambrose (Costa, 2010). At the same time dance music was increasingly played on the radio and available to listen to on the gramophone. The year 1926 even saw the launch of what Russell (1991: p. 83) describes as 'a dance band musicians' paper', the *Melody Maker*.
Incumbent response to recession: consolidation and rationalisation of production

The decline of the brass band movement that began in the 1920s and accelerated in the 1930s led to a severe contraction in instrument manufacturing (Myers, 2003: p. 55). In London, which was a major centre of instrument manufacturing, numbers employed declined by almost two-thirds in the course of a decade, from 23,000 in 1929 to 8,000 in 1938 (White, 2008:p. 190). Faced with a sharp fall in demand during the Depression many small brass instrument manufacturers went out of business (Myers, 2003: p. 117). Others gave up manufacturing, hoping to get by on repair work and renovating second-hand instruments. A wave of mergers and acquisitions among the larger firms (Table 6) reduced their number from five to just one in the space of eighteen years. As Myers (2002: p. 48) notes, what had been the largest firm in the pre-war era, namely Boosey & Co, effectively 'swallowed up the firms who were their biggest competitors in the late nineteenth century'. Boosey & Co had already acquired the relatively small instrument maker J R Lafleur & Son in 1917. However, in 1930 Boosey & Co took the much more significant step of merging with their great rival, Hawkes and Son. Both companies were active in music publishing and instrument production and both retained manufacturing facilities located in central London. The motive for the merger was to avoid a price war in the very difficult trading conditions that prevailed at the time. In the first directors' report of the new merged undertaking in February 1931, the chairman, Lesley Boosey, noted the adverse effects of 'active and intense competition' between the two companies up to the point of amalgamation (Wallace, 2007: p. 9). Significantly, Wallace (2007: p. 8) notes that 'great savings' were anticipated from the two companies combining their instrument manufacturing

businesses. In due course the merger produced significant rationalisation of instrument manufacturing. In pursuit of modernisation Hawkes & Son had optimistically invested in the construction of a large spacious production facility in outer London in 1924–5. This was the famous ‘Sonorous Works’ at Deanbrook Road, in Edgware (Myers, 2003: p. 55). Following the merger, Boosey’s instrument manufacturing was transferred from its Marble Arch facility in central London to the large modern facility at Edgware. The scale of the rationalisation and the capacity reduction that these changes brought about is apparent from pre- and post-merger production figures. The output of brass instruments produced by the combined firm, now trading as Boosey & Hawkes, averaged 2723 per year in the period 1930–39, less than the output of Boosey & Co alone in 1920–29, when it averaged 2923 instruments per year (Myers, 2003: p. 61).

INSERT ABOUT HERE - Table 6: Mergers and acquisitions of brass instrument makers

The year 1930 also saw the large Manchester-based brass instrument maker, Joseph Higham taken over and its production facilities closed. This was a significant loss as the firm was long established, being almost 100 years old, employing nearly 100 staff (Herbert, 1991: p. 31) at the turn of the century (see Table 2). During the course of the 19th century the firm had manufactured some 60,000 brass instruments. Further mergers followed as the decade of the 1930s progressed, with Boosey & Hawkes gradually swallowing its competitors among the larger manufacturers, resulting in further plant closures and consolidation of production. Soon after the start of World War Two, Boosey & Hawkes acquired the long established firm of Rudall, Carte & Co which had been struggling for some time, having suffered from a chronic lack of investment and the use of outdated manufacturing methods (Bigio, 2011). Again the production facilities were closed down. Some production was transferred to Edgware, but in the main its well- established trade name appeared on poor quality imported models (Powell, 2012).

Finally, the mid-1940s saw Boosey & Hawkes acquire the only other remaining large-scale producer, when it acquired F Besson & Co. Bessons had once employed more than 100 staff and been pre-eminent as the largest supplier of brass instruments in the country (Myers and Eldredge, 2006). It had enjoyed a particularly close relationship with the brass band movement and had at one time been the largest supplier of brass instruments in the country. The actual merger was a ‘protracted affair’ (Myers, 2003: p. 56). Bessons had been using Boosey & Co’s compounding pistons since the 1920s and in 1933 leased the former Boosey & Co factory in Marble Arch, transferring production from its Euston Road factory to this facility. Throughout the 1930s Besson designs were copies of Boosey & Hawkes instruments. In addition, the manufacture of some of the cheaper lower quality instruments was subcontracted to Boosey & Hawkes (Myers and Eldredge, 2006). A full merger took place just after the start of the war, leading to the closure of the Marble Arch plant and the transfer of production to Edgware. Thus, the response to the decline of the brass band market brought on by the economic crisis of the 1930s was one of mergers and acquisitions as Boosey & Co gradually acquired its main rivals in an attempt to eliminate cut-throat competition. Extensive rationalisation of instrument manufacturing facilities in order to reduce surplus manufacturing capacity then followed. Eventually, brass instrument manufacturing came to be dominated by Boosey & Hawkes and it re-located production, from what had been the centre of musical instrument-making in central London, to a large modern production facility at Edgware on the outskirts of London that originally belonged to Hawkes & Son.

Rationalisation provided the company with scope for further cost reductions as it increasingly utilised mass production methods. Indeed, Myers (2003: p. 16) notes how the introduction by Boosey & Hawkes of their Regent models produced from 1932 onwards was 'the first step toward mass production'. Myers goes on to note how Boosey & Hawkes pioneered the development of mechanised processes for some of the more labour-intensive operations in brass instrument-making in the 1930s, paving the way for the transition from manufacturing in small batches to mass production in the late 1940s and 1950s.

Entrepreneurial innovation as a response to recession: the case of Paxman Bros

Paxman Bros was founded by Harry Paxman and his brothers Bertram and William in 1919. Born in 1894, Harry Paxman was a keen clarinet player as a young man. But his hopes of a career as a professional musician were sadly dashed in 1917 when he was badly wounded while fighting in the trenches. Hit in the face by a bullet, he lost the use of his facial musculature (Mathez, 1999). This put paid to his musical ambitions. Undaunted, when the First World War finally ended he set up in business as a music dealer in partnership with his brothers. 'Paxman Bros' as the firm styled itself, were musical instrument dealers with retail premises south of the river Thames in Southwark Street, near London Bridge. As was normal practice at the time, they sold a range of accessories such as mouthpieces, music stands and travelling cases, as well as instruments. Like most music dealers they were also involved in repairing and maintaining instruments. As music dealers, Paxman Bros catered for all three segments of the brass musical instruments market. Paxman Bros were well placed to sell instruments to brass bands even though most of them were located in the North of England. This was because their South London shop was close to Crystal Palace, the venue for the National Brass Band Championships, where many bandmasters placed their yearly orders for new instruments. A photograph from the 1920s (Mathez, 1999) shows Paxman Bros' large stand and display at this annual event and it is notable that they offered not only brass instruments but also woodwind instruments and a wide range of accessories. The importance of military bands to the firm can be gauged from one of the interviewees who noted that Harry Paxman 'used to be involved quite significantly with the military and on a weekly basis he used to do the rounds at Aldershot'. Aldershot, as a garrison town was home to as many as ten or 12 regimental bands at this time. With so many bands it was clearly worthwhile for Paxman to visit the town each week, in order to meet with the various bandmasters and 'pick up bits and pieces of business,' which would normally have included collecting and returning instruments for repair. Given the mechanical nature of brass instruments they were subject to significant wear and tear on the parade ground, not just through use but through being transported to and from events, and this was typically an important part of the service provided by most retailers of musical instruments. Additionally, it seems likely that these visits also involved sales of instruments, instrument accessories and sheet music. Although Paxmans' business expanded during the course of the 1920s it was not immune to the economic depression of the following decade. However, as music dealers they were not as badly affected as the brass instrument manufacturers. They had the benefit of serving three different markets only one of which, the brass band segment, was especially badly hit by a substantial fall in demand. In addition, they could fall back on other activities, such as repair work, to provide alternative sources of revenue. Instrument repairs had always been an important part of the business. Gamble and Lynch (2012) note that in the 1940s, the firm was used extensively by Dennis Brain, Britain's

leading French horn player of the period, for the repair and maintenance of a number of his instruments. If anything, this work expanded during the Depression, as musicians and bands put off replacing instruments, preferring to have them repaired instead. As Haswell (2011) notes, in these difficult times musicians made increasing use of secondhand instruments rather than purchasing new ones and this meant more repair and renovation work. Paxmans were fortunate in that the decline of the brass band sector in the North of England was to some extent counterbalanced by London's relative prosperity in the 1930s (White, 2008: p. 190) and the rapidly increasing popularity of dance bands (Parsonage, 2005) noted earlier. The change in Paxmans' customer base, reflected in the growth of the dance band market and the decline of brass bands, led the firm to relocate. In 1935 Paxman Bros took the bold decision to move from south of the river on Southwark Street to a new site north of the river in the West End, where they were particularly well placed to cater for professional musicians. The new premises at Shaftesbury Avenue, in the heart of London's West End, were ideally located to serve London's community of professional musicians, in particular those serving the rapidly expanding dance band market based in the surrounding hotels, nightclubs and similar venues.

Paxmans' first product innovation: the Sousaphone

Described by Russell (1991: p. 81) as a 'sea change' in British popular music culture, it has already been seen that dancing and dance bands featured prominently in the inter-war years. The enormous increase in the popularity of dancing brought with it new styles of dance music. A key feature of this change in British taste and repertoire was that it owed a great deal to American influences (Costa, 2010). Russell (1991: p. 81) describes this as the 'Americanisation of British popular music'. What began with jazz in the years after World War One quickly metamorphosed into dance music. British bands adopted a much lush, sweeter style, drawing heavily on the music of the American bandleader Paul Whiteman. Whiteman, who toured Britain twice in the 1920s is described by Russell (1991: p. 82) as the man who 'virtually set the agenda for British dance music in the 1920s'. Helped by the new technologies of radio and gramophone, interest in American styles of popular music in general and dance music in particular, 'called into being a legion of dance bands' (Russell, 1991: p. 83). By the 1930s dance bands had become a major feature of musical life. The massive appetite for American-influenced dance music led to a rise in sales of what for British musicians of the period were relatively unorthodox musical instruments. The most notable of these were the various forms of saxophone. When first introduced into Britain by the Original Dixieland Jazz Band in 1919, the saxophone was treated as an American novelty, becoming for a time the butt of jokes by musical hall entertainers (Parsonage, 2005). But it quickly came to symbolise the American influence of jazz, both in terms of its sound and its visual effect. However, Russell (1991: p. 85) notes there were actually several other musical instruments that crossed the Atlantic at this time. One of these distinctively American instruments was the sousaphone. This instrument was initially developed as a type of tuba in 1893 by J.W. Pepper & Son of Philadelphia (Bierley, 2006), at the behest of John Philip Sousa. Though better known for his marches, Sousa in fact wanted a concert instrument that would be easier to play while retaining a full rich sound. The tone he sought was achieved by widening the bore and throat of the instrument. Essentially it was similar to the tuba, but with an extra-large flared bell that faced forward above the player's head (Bevan, 1997), making it easier to play and giving it a fuller, richer sound. It was this distinctive sound (Costa, 2010), that made it attractive to dance bands. Early dance bands in the 1920s nearly always included a sousaphone. The Paul Whiteman band, an American band that did much to popularize and legitimize jazz as dance music in

the 1920s, included a sousaphone in its line-up, and an early picture of the Savoy Orpheans, a leading British dance band heavily influenced by Whiteman (Parsonage, 2005), features not one but two sousaphones (see figure 1). Given its origins, the sousaphones in use in Britain in the 1930s were generally ones imported from the United States, although a very small number were briefly produced by Hawkes & Son in the early 1920s (Myers, 2002). However, high import tariffs meant that imported American instruments were expensive and difficult to obtain. Despite the economic gloom, Harry Paxman saw this situation as a possible commercial opportunity. In the early 1930s, according to one interviewee he determined that, 'rather than import these things across the Atlantic', Paxmans should endeavour to innovate and produce a British-made sousaphone. Although a number of former music dealers, including Boosey & Co, had made a similar move into the manufacture of instruments, nonetheless this was a very ambitious step to take especially in the midst of the most severe economic crisis of the 20th century. Brass instruments at this time were largely hand-crafted. Some aspects of manufacturing such as the fabrication of pipework, assembly and finishing utilised general purpose metal-working skills. Other aspects, such as the fabrication of valves and bells demanded precision machining and specialist metal-working equipment and skills (Merewether, 1978). This was especially true of the sousaphone with its large forward facing bell. While the materials to manufacture brass instruments, such as sheets of 'yellow brass', a brass alloy comprising 70% copper and 30% zinc (Merewether, 1978) were readily available, the rationalisation that was such a feature of the inter-war period meant there were no subcontractors who could fabricate specialist items like valves and bells. Hence innovation, while attractive in view of the growing demand for unorthodox American instruments, posed very real obstacles for a small firm like Paxmans, which was really little more than a musical instrument retailer.

Figure 1: The Savoy Orpheans, c.1926 (photo courtesy: The Savoy archive)

Faced with these challenges, Harry Paxman searched for ways of reducing the skills and capabilities required. His chosen strategy was based on improvisation and bricolage. Rather than utilising conventional fabrication processes to make brass instruments he decided to 'make do' by seeking alternative and unconventional ways of achieving the same end. By adopting these unconventional approaches, he reduced the need for the specialist skills, capabilities and equipment that the firm lacked. There were two key aspects to the improvisation in this instance. Firstly, Paxman chose not to manufacture sousaphones 'ab initio', but rather to 'make do' by re-using (i.e. modifying) existing instruments. His second piece of improvisation extended to getting someone else to fabricate the part of the instrument that was the most demanding in terms of handcrafting skills, namely the large forward facing bell. A particularly novel aspect of the improvisation was that Paxman used a subcontractor working in a completely different field and with no experience or exposure to brass instrument making. Apart from its overall shape and appearance, the sousaphone is technically very similar to the tuba and its sister instrument, the *hélicon*. Thus, Paxmans could build sousaphones by modifying secondhand *hélicons*. At a stroke it eliminated a demanding and difficult task, namely the machining of the valve cluster containing the valves which enable the player to achieve different notes. For Paxmans it meant they did not have to invest in expensive machining equipment or recruit skilled machinists. Instead they could get by with the conventional metal-working skills of their existing staff. This did not completely remove the need to fabricate some parts of the instrument, in particular the large forward facing flared bell. Producing the bell posed a major challenge to the would-be innovator. It was a difficult task, which according to one interviewee

required 'real skill'. A chance conversation with one of his neighbours provided a possible solution in the form of a kitchen utensil manufacturer, willing to use his metal spinning expertise to fabricate bells, rather than the large pots and pans he normally produced. After much experimenting this firm came up with a passable bell and Paxmans duly went into production making sousaphones. Hence, improvisation in the form of adaptation and the application of transferable skills provided Paxmans with an acceptable source of supply for the one major component they could neither buy in nor fashion themselves.

The consequences of improvisation for Paxman Bros

Improvising in this way had a number of benefits. First, it dramatically reduced the amount of fabrication work that the firm had to undertake, with major implications for the resources required. Second, it meant that Paxmans didn't have to manufacture either of the two most challenging parts of the instrument, namely the valve clusters and the bells. Valves and their associated valve clusters were particularly challenging, because this was one of the most demanding and difficult parts of the manufacturing process, in terms of specialist machining equipment and craft knowledge and skills. Thirdly it made very good use of the particular craft skills that the Paxman workforce did possess. Most music dealers offered a range of repair and maintenance services and Paxman Bros was no exception. As a recent study of French horn playing noted 'they also fix horns at Paxmans' (Rees, 2008: p. 133) and on a number of occasions in the 1940s they carried out extensive modification work on French horns for the British horn virtuoso, Dennis Brain (Gamble and Lynch, 2012). Hence, modifying existing *hélicons* to produce sousaphones fitted well with the company's existing expertise and capabilities. A fourth benefit was that producing sousaphones in this way significantly reduced the risks involved. With less money tied up in equipment and staff than would have been the case had they fabricated the whole instrument, Paxmans were much less exposed in the event of the innovation failing. Paxmans' entry into manufacturing proved to be comparatively shortlived, since with the onset of war in 1939 and the mobilisation of many of the staff, production of sousaphones ceased. Added to this, the company's premises were badly damaged by bombing in the early years of the war. Despite this, one of the interviewees noted that Harry Paxman managed to continue running the business, though it was now based at his home in Hanwell in West London where he had a small workshop for repairing instruments. However, the lessons learnt from improvising innovation with the sousaphone were not lost and were put to good use in the years after World War Two. In 1945 Paxman Bros moved to new premises in Gerrard Street in Soho (Mathez, 1999). Harry Paxman's son joined him in the business and as one interviewee explained, in the confused conditions that prevailed at the end of the war he was able to poach three skilled instrument makers from Boosey & Hawkes and Besson & Co. Initially taken on to carry out repair work, Paxman was keen to return to manufacturing. This time, however, he chose not the sousaphone but an instrument from the classical repertoire, namely the French horn. Rather than copy the narrow bore instruments produced in France at this time, Paxman again chose to innovate by producing wide bore German style horns not previously been produced in Britain. A novel feature of these horns was that they used rotary valves that required precision machining. Consequently Paxman was again forced to improvise, this time by getting skilled machinists working for the gas board to 'moonlight' and work for him on a part time basis. Despite a slow start, Harry Paxman's bold decision paid off. In the 1950s Paxmans got specialist advice from a professional horn player, Richard Merewether, who had a keen interest in horn design. The resulting creative alliance resulted in the development of some outstanding high quality instruments that incorporated a number of

innovations. In time, Paxmans gained recognition as innovators in horn design and today they are regarded as, 'the leading British manufacturer of French horns' (Rees, 2008: p. 104) and as producers of some of the world's finest instruments, used by many of the leading horn players around the world.

Concluding remarks

This paper has examined contrasting firm-level responses to a period of economic crisis and uncertainty. It has done so by presenting a comparative case-based analysis of changes that took place in a particular industry sector during the Great Depression of the 1930s. Though not entirely distinct, it has been possible to distinguish between responses that are primarily oriented around retrenchment and rationalisation and those in which firms engage in a pattern of entrepreneurial improvisation and innovation. This concluding section highlights some of the main findings from the case study and relates them to the literature on improvisation and bricolage. It also proposes an outline agenda for future research in this area and discusses the wider implications of the findings for policy and practice.

Reflecting on the findings

The case study explored the factors that might lead some firms to respond more creatively to economic crisis by seeking new entrepreneurial opportunities, while others adopt a defensive approach, concentrating their efforts on retrenchment and rationalisation. In terms of entrepreneurial behaviour, the two firms provide a sharp contrast between the incumbent brass instrument manufacturer, Boosey & Co, and Paxman Bros, a much smaller firm that was still essentially a retailing and repair business at the outset of the economic crisis of the 1930s. Like many other incumbent firms in other industries (e.g. Raleigh in the cycle industry (Rosen, 2002)) Boosey & Co reacted to the decline in demand with a wave of mergers and acquisitions aimed at rationalising production and cutting back on surplus capacity and supply assets. Their view was clearly that such actions were necessary in order to bring supply and demand into something approaching equilibrium. The smaller firm, Paxmans, viewed the crisis differently and identified new opportunities that arose from these changing patterns of demand. Perhaps as a consequence of his considerable experience of retailing, Harry Paxman perceived that the economic crisis was linked to changing consumer tastes. In particular, he recognised what Russell (1991: p. 85) has described as the 'massive appetite for American-influenced dance music' in the United Kingdom at this time, which meant a growing market for American brass instruments, including unorthodox ones like the sousaphone. For him, this was an opportunity and one that he intended to profit from through an ambitious plan to innovate and diversify into brass instrument manufacture. What is remarkable is that many in the music business at this time thought the new music would be short-lived (ibid: p. 84). Harry Paxman clearly had other ideas, and it appears to be these differences of perception, coupled with the firm's distinctive bundles of resources and capabilities, that enabled Paxmans to pursue this productive opportunity (Penrose [1959] 2004). Consequently, Paxman was able to take a quite different course from other firms in this industry sector. Though clearly ambitious and forward thinking, Harry Paxman had to overcome significant obstacles if he was to innovate in such a severe economic downturn. He faced severe resource constraints in terms of finance, equipment, knowledge and skilled staff. In addition, there was a real risk of losing the family business if the innovation had proved misguided. The research literature on entrepreneurial improvisation and

bricolage has pointed out why this kind of strategy is attractive to people who are operating in highly uncertain and resource-constrained conditions (e.g. Baker and Nelson, 2005). This historical case contributes additional insights into the nature of the improvisations undertaken by smaller firms. In particular, it illustrates the forms that entrepreneurial bricolage can take. More specifically, it shows in considerable detail how Paxmans' improvisational repertoire involved entrepreneurial bricolage, comprising a number of elements including: 'making do' by using existing workshop facilities; re-use through modifying an existing product rather than producing ab initio; and adaptation of production processes (i.e. metal spinning) to entirely different contexts. The firm also translated pre-existing skills in brass instrument repair and modification to full-scale manufacturing, an improvisatory transition that has parallels in Fairey Marine's successful reapplication of its manufacturing skills in the immediate post-war period from military aircraft to motorboats and sailing dinghies (Blundel, 2006). These improvisations addressed resource constraints, facilitated product diversification and reduced the overall level of risk in terms of cash invested in new equipment, staff or premises.

Implications for policy and practice

After more than six years of financial and economic dislocation, governments around the world are actively seeking new ways to address the seemingly insurmountable challenge of 'rebalancing' their economies and returning them to a soundly-based and sustainable growth trajectory. The private sector is widely seen as the key contributor to growth, with efforts being made at regional, national and international levels to promote enterprise and innovation (e.g. European Commission, 2010). However, the retrenchment and rationalisation strategies adopted by many firms appear to operate in the opposite direction, with defensive mergers, plant closures and cutbacks in capacity leading to a loss of jobs and reductions in income. This tendency was also evident in the case studies, where incumbent firms presided over a substantial fall in the output of brass instruments. The entrepreneurial improvisation displayed by firms like Paxman Bros represents a stark contrast, which provides some valuable lessons for modern firms responding to recession. It shows clearly that there are alternatives to retrenchment and rationalisation. The turbulence and instability associated with economic crises can give rise to new business opportunities that demand entrepreneurial behaviour and innovation, and the case of Paxman Bros shows how entrepreneurial improvisation can be an effective way of capitalising on such opportunities.

There are two clear implications of this study for modern day policymakers. Firstly, that it is time to pay much more serious attention to firms that display a capacity for entrepreneurial improvisation, including more detailed investigation of the distinctive ways in which they perceive opportunities and the micro-processes that enable them to overcome the powerful constraints on action that seem to inhibit other firms. Secondly, that entrepreneurial improvisation can occur in what might at first sight appear to be unlikely contexts. So while there is a strong case for paying attention to the 'usual suspects' in technology-intensive industries, it is also important to look further afield and to recognise the potential for economic revival in less obvious places, including traditional and artisanal sectors (Blundel and Smith, 2013). The story of Paxman Bros also has implications for today's practitioners, including business owners, managers and advisers. It is a reminder that, as is the case in the histories of many smaller firms, long periods of stability and relatively low levels of change can be followed by more dynamic, entrepreneurial phases. In this case, the firm's experiences in the Great Depression of the 1930s did not generate rapid rates of growth or even a wholesale

diversification into manufacturing. However, by engaging in the entrepreneurial improvisations described in the narrative, Harry Paxman and his colleagues demonstrated their resilience, a capacity that is increasingly recognised as essential in economic, social and environmental terms (e.g. Folke et al., 2010). In this case, this meant that they were able to keep the business afloat through a period in which many other firms in the sector either declined or went out of business. On the basis of the evidence presented in this historical study, those involved with small firms would also benefit from noting how artisanal approaches, contrary to popular views of craft production being inherently conservative, can actually make a firm more adaptable and capable of innovation in the face of an economic downturn. Finally, having exercised a capacity for improvisation and innovation during an economic downturn, Paxmans were well placed to revisit it during the post-war era and to make a more substantive move into manufacturing in a more prosperous times. By developing and sharing the skills of improvisation and entrepreneurial bricolage, SMEs could do a great deal to help themselves and to contribute to a much-needed recovery.

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Figures and Tables

Table 1
Specialist Periodicals

	Periodical	Focus	Publisher
1.	<i>The Horn Call</i>	French horn	International Horn Society
2.	<i>The Horn Player</i>	French horn	British Horn Society
3.	<i>Brass Historical Society Newsletter</i>	French horn	British Horn Society
4.	<i>Brass Bulletin</i>	Brass instruments	Editions-BIM, Belgium
5.	<i>Historic Brass Journal</i>	Brass instruments	Historic Brass Society
6.	<i>Galpin Society Journal</i>	Musical instruments	The Galpin Society

Table 2
Larger brass instrument manufacturers circa 1900

Date	Firm	Location	Employees	Output (weekly)
1890	<i>F. Besson & Co.</i>	Euston Road, London	131	100
1895	<i>Hawkes & Son</i>	Denman St, Piccadilly Circus, London	100	n/a
1890	<i>Boosey & Co.</i>	Stanhope Place, Marble Arch, London	100	n/a
1892	<i>J Higham</i>	Manchester	70-90	n/a
1889	<i>Salvation Army</i>	St Albans	n/a	16

Source: Myers (1991: p185)

Table 3
Boosey & Co annual sales by market segment 1875-99

Market segment	1875	1899
<i>Boosey & Co</i>	33%	8%
<i>Dealers, agents & individuals</i>	34%	29%
<i>Amateur (brass) bands</i>	8%	33%
<i>Military bands (incl. overseas)</i>	25%	29%
<i>Others</i>	0%	1%
	100%	100%

Source: Myers (2002: p400); Stock Books, Boosey & Hawkes Archive, Horniman Museum

Table 4
Size of the average brass band (circa 1860)

No.	Instrument	Type
1-2	Sopranos	mostly in Db but some in Eb
5	Cornets	mostly in Ab but some in Bb
0-1	Alto saxhorns	in Ab
2-3	Tenor saxhorns or alt horns	mostly in Db but some in Eb
1-2	Baritones	mostly in Ab but some in Bb
1	Tenor trombone	mostly in C but some in Bb
1	Bass trombone	mostly in G
1-2	Ophicleides	mostly in C, but some in Bb
1	Sax bass or euphonium	mostly in Bb or Ab but some in C
2	Contrabass saxhorns or bombardons	mostly in Eb but some in Db

Source: Myers (1991:p181)

Table 5
Mergers and acquisitions of brass instrument makers

Date	Acquirer	Acquired	Products	Changes in activity
1917	<i>Boosey & Co.</i>	J R Lafleur & Son	Manufacturer & importer	n/a
1925	<i>F. Besson & Co.</i>	Quilter	Not known	n/a
1930	<i>Boosey & Co.</i>	Hawkes & Son	Brass manufacturer	Marble Arch plant closed and transferred to Edgware
1930	<i>Mayers & Harrison</i>	J Higham	Brass Manufacturer	Plant closed/ production ceased
1940	<i>F. Besson & Co.</i>	Wheatstone & Co	Instrument manufacturer	Manufacturing transferred
1941	<i>Boosey & Hawkes Ltd</i>	Rudall Carte & Co	Flute & Brass manufacturer	Plant closed 1939 and production transferred to Edgware
1948	<i>Boosey & Hawkes Ltd</i>	F. Besson & Co	Brass manufacturer	Plant closed & production transferred to Edgware
1970	<i>Boosey & Hawkes Ltd</i>	Salvation Army Brass factory	Brass manufacturer	Plant closed and production transferred to Edgware